

AN ALBINO-FORM OF *MACROZAMIA SPIRALIS* Miq.

By VALERIE MAY, B.Sc., Commonwealth Research Scholar in Botany,  
University of Sydney.

(Two Text-figures.)

[Read 27th July, 1938.]

The seeds of *Macrozamia spiralis* Miq. are not dispersed far from the parent, so that a female plant becomes surrounded by a colony of its offspring. In one such colony of about 40 individuals—at Narrabeen, a few miles north of Sydney, New South Wales—two of the young cycads were white. The pinnae were fully unfolded, and the petioles were not abnormally long. There was therefore no question of the white seedlings being etiolated. That the lack of chlorophyll was not due to the habitat is shown by the presence of normal (green) seedlings on all sides under similar conditions. It seems highly probable that albinism in this

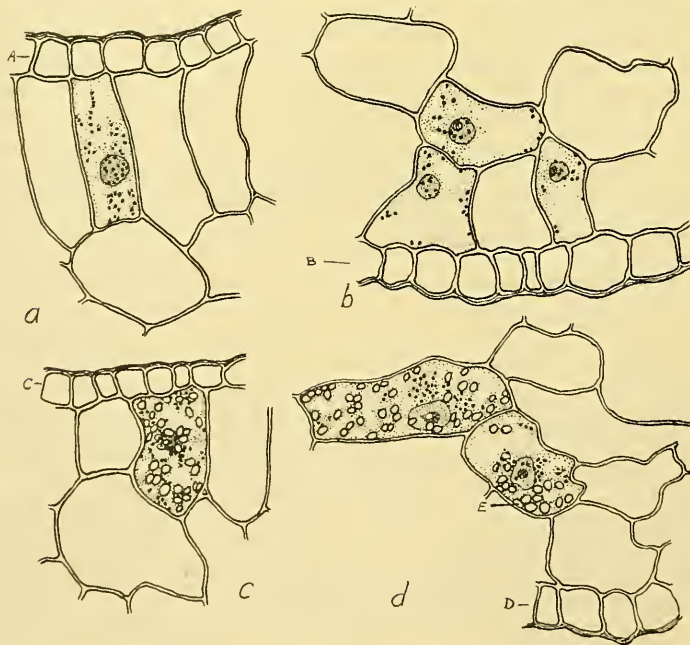


Fig. 1.

a, b.—Palisade cells and mesophyll of a pinna of the albino-form. A, upper epidermis.  
B, lower epidermis. (× 300.)  
c, d.—Palisade cells and mesophyll of a pinna of the normal form. C, upper epidermis.  
D, lower epidermis. E, plastids. (× 300.)

instance is the result of a plastid deficiency in the cytoplasm of the egg or of a gene mutation. The production by a single plant of two albino-forms, apparently of different age, suggests that there have been two independent instances of plastid deficiency, or that the female parent is heterozygous with respect to the production of chlorophyll. If the albinism is due to heterozygosity of the female plant, some of the fertilizing pollen was derived from a plant also heterozygous as regards this factor. This seems a more plausible suggestion than that a dominant albino mutation has occurred twice in one plant within a few years.

Figure 2 shows the larger of the albino plants. This plant still possessed stored starch in the endosperm. It will be of interest to know the size attained by the other (undisturbed) albino before it exhausts the food-stores of the seed; at this stage the factor preventing chlorophyll formation, and so photosynthesis, will prove lethal.



Fig. 2.—Photograph of albino *Macrozamia*. ( $\times \frac{1}{3}$ .)

Part of the cross-section of a pinna of an albino is shown in figure 1, *a*, *b*. Figure 1, *c*, *d*, shows corresponding part of a green pinna. The albino differs from the normal, not only in the absence of chlorophyll, but in the absence of the plastids themselves; no other observable difference was noted in these sections. Sections of the abaxial surfaces of albino and normal pinnae showed no difference between the mean number of stomata per unit area.

The plants described above were found by students working under the writer's direction at the Field Station of the Sydney University Biological Society.